2009

Test 1953: Challenger MT845C Diesel

Nebraska Tractor Test Laboratory

NEBRASKA OECD TRACTOR TEST 1953 – SUMMARY 640
CHALLENGER MT845C DIESEL
16 SPEED

POWER TAKE-OFF PERFORMANCE

Power HP *(kW)*	Crank shaft speed rpm	Gal/hr *(l/h)*	lb/hp.hr *(kg/kW.h)*	Hp.hr/gal *(kW.h/l)*	Mean Atmospheric Conditions
MAXIMUM POWER AND FUEL CONSUMPTION					
Rated Engine Speed—(PTO speed—1061 rpm)					
390.78 *(291.41)*	2100	23.98 *(90.78)*	0.433 *(0.263)*	16.29 *(3.21)*	
Standard Power Take-off Speed - (PTO speed - 1000 rpm)					
417.21 *(311.11)*	1980	24.84 *(94.03)*	0.420 *(0.255)*	16.80 *(3.31)*	
Maximum Power (1 hour)					
442.53 *(329.99)*	1700	24.82 *(93.95)*	0.395 *(0.241)*	17.83 *(3.51)*	
VARYING POWER AND FUEL CONSUMPTION					
390.78 *(291.41)*	2100	23.98 *(90.78)*	0.433 *(0.263)*	16.29 *(3.21)*	Air temperature
347.04 *(258.79)*	2193	22.16 *(83.90)*	0.450 *(0.274)*	15.66 *(3.08)*	77°F *(25°C)*
261.22 *(194.79)*	2199	18.67 *(70.69)*	0.504 *(0.307)*	13.99 *(2.76)*	Relative humidity
174.02 *(129.76)*	2200	14.87 *(56.29)*	0.603 *(0.367)*	11.70 *(2.31)*	48%
87.00 *(64.88)*	2200	10.07 *(38.13)*	0.817 *(0.497)*	8.64 *(1.70)*	Barometer
2.65 *(1.97)*	2200	6.45 *(24.45)*	17.207 *(10.467)*	0.41 *(0.08)*	28.64" Hg *(96.99 kPa)*

Maximum Torque - 1511 lb.-ft. *(2048 Nm)* at 1051 rpm
Maximum Torque Rise - 54.6%
Torque rise at 1700 engine rpm - 40%
Power increase at 1700 engine rpm - 13.2%

DRAWBAR PERFORMANCE (Unballasted)
FUEL CONSUMPTION CHARACTERISTICS

Power Hp *(kW)*	Drawbar pull lbs *(kN)*	Speed mph *(km/h)*	Crank-shaft speed rpm	Slip %	Fuel Consumption lb/hp.hr *(kg/kW.h)*	Fuel Consumption Hp.hr/gal *(kW.h/l)*	Temp.°F *(°C)* cool-ing med	Temp.°F *(°C)* Air dry bulb	Barom. inch Hg *(kPa)*
Maximum Power—6th Gear									
331.68 *(247.33)*	27840 *(123.84)*	4.47 *(7.19)*	2103	2.5	0.513 *(0.312)*	13.76 *(2.71)*	181 *(83)*	67 *(19)*	28.83 *(97.63)*
75% of Pull at Maximum Power—6th Gear									
264.12 *(196.95)*	20951 *(93.20)*	4.73 *(7.60)*	2200	1.3	0.567 *(0.345)*	12.45 *(2.45)*	184 *(84)*	78 *(26)*	28.85 *(97.70)*
50% of Pull at Maximum Power—6th Gear									
177.21 *(132.15)*	13956 *(62.08)*	4.77 *(7.67)*	2199	0.6	0.681 *(0.414)*	10.37 *(2.04)*	183 *(84)*	79 *(26)*	28.86 *(97.73)*
75% of Pull at Reduced Engine Speed—9th Gear									
264.08 *(196.92)*	20978 *(93.32)*	4.72 *(7.60)*	1540	1.4	0.501 *(0.305)*	14.09 *(2.77)*	184 *(85)*	81 *(27)*	28.86 *(97.73)*
50% of Pull at Reduced Engine Speed—9th Gear									
177.05 *(132.03)*	13951 *(62.06)*	4.76 *(7.66)*	1540	0.7	0.562 *(0.342)*	12.56 *(2.47)*	182 *(84)*	80 *(27)*	28.86 *(97.73)*

Location of test: Nebraska Tractor Test Laboratory, University of Nebraska, Lincoln, Nebraska 68583-0832

Dates of tests: May 12 - 20, 2009

Manufacturer: AGCO Corporation, 4205 River Green Parkway, Duluth Ga 30096

FUEL, OIL and TIME: Fuel No. 2 Diesel **Specific gravity converted to 60°/60°F *(15°/15°C)*** 0.8470 **Fuel weight** 7.052 lbs/gal *(0.845 kg/l)* **Oil SAE** 10W-30 **API service classification** CI-4 **Transmission and hydraulic lubricant** AGCO Trandraulic 821 XL fluid **Total time engine was operated:** 29.0 hours

ENGINE: Make Caterpillar Diesel **Type** six cylinder vertical with turbocharger and air to air aftercooler **Serial No.***JAS00812* **Crankshaft** lengthwise **Rated engine speed** 2100 **Bore and stroke** 5.402" x 6.752" *(137.2 mm x 171.5 mm)* **Compression ratio** 18.0 to 1 **Displacement** 928 cu in *(15213 ml)* **Starting system** 12 volt **Lubrication** pressure **Air cleaner** two paper elements and aspirator **Oil filter** one full flow cartridge **Oil cooler** engine coolant heat exchanger for crankcase oil, radiator for hydraulic and transmission oil **Fuel filter** two paper elements and water separator **Fuel cooler** radiator for returned fuel **Muffler** vertical **Cooling medium temperature control** 2 thermostats

ENGINE OPERATING PARAMETERS: Fuel rate: 156.3 - 172.8 lb/h *(70.9 - 78.4 kg/h)* **High idle:** 2175 - 2225 rpm **Turbo boost:** nominal 18.1 - 20.3 psi *(125 - 140 kPa)* as measured 19.6 psi *(135 kPa)*

CHASSIS: Type tracklayer-rubber tracked **Serial No.***AGCC0845ENUHA1001* **Track width** 100.0" *(2540 mm)* to 120.0" *(3048 mm)* **Length of track on ground** 124.3" *(3157 mm)* **Hydraulic control system** direct engine drive **Transmission** selective gear fixed ratio with full range operator controlled power shift **Nominal travel speeds mph *(km/h)*** first 1.67 *(2.69)* second 2.13 *(3.43)* third 2.68 *(4.31)* fourth 3.41 *(5.48)* fifth 4.06 *(6.54)* sixth 4.58 *(7.37)* seventh 5.16 *(8.31)* eighth 5.80 *(9.34)* ninth 6.53 *(10.51)* tenth 7.34 *(11.82)* eleventh 8.29 *(13.34)* twelfth 9.33 *(15.02)* thirteenth 11.10 *(17.87)* fourteenth 14.11 *(22.71)* fifteenth 17.86 *(28.75)* sixteenth 24.86 *(40.00)* at 2300 rpm, reverse 1.34 *(2.16)*, 3.24 *(5.22)*, 3.66 *(5.89)*, 8.89 *(14.30)* **Clutch** wet multiple disc hydraulically actuated by foot pedal **Brakes** wet multiple disc hydraulically actuated foot pedal **Steering** electro-hydraulic differential steering controlled by steering wheel **Power take-off** 1000 rpm at 1980 engine rpm **Unladen tractor mass** 43380 lb *(19677 kg)*

DRAWBAR PERFORMANCE
Unballasted at 2100 RPM

MAXIMUM POWER IN SELECTED GEARS

Power Hp *(kW)*	Drawbar pull lbs *(kN)*	Speed mph *(km/h)*	Crank-shaft speed rpm	Slip %	Fuel Consumption lb/hp.hr *(kg/kW.h)*	Hp.hr/gal *(kW.h/l)*	Temp.°F *(°C)* cool-ing med	Air dry bulb	Barom. inch Hg *(kPa)*
					3rd Gear				
281.69	42616	2.48	2176	12.2	0.586	12.05	181	68	28.91
(210.05)	*(189.57)*	*(3.99)*			*(0.356)*	*(2.37)*	*(83)*	*(20)*	*(97.90)*
					4th Gear				
317.29	36945	3.22	2106	6.3	0.543	13.00	181	72	28.90
(236.60)	*(164.34)*	*(5.18)*			*(0.330)*	*(2.56)*	*(83)*	*(22)*	*(97.87)*
					5th Gear				
329.62	31477	3.93	2102	3.9	0.522	13.52	182	68	28.83
(245.79)	*(140.02)*	*(6.32)*			*(0.318)*	*(2.66)*	*(83)*	*(20)*	*(97.63)*
					6th Gear				
331.68	27840	4.47	2103	2.5	0.513	13.76	181	67	28.83
(247.33)	*(123.84)*	*(7.19)*			*(0.312)*	*(2.71)*	*(83)*	*(19)*	*(97.63)*
					7th Gear				
327.61	24189	5.08	2103	1.8	0.520	13.57	181	63	28.82
(244.30)	*(107.60)*	*(8.17)*			*(0.316)*	*(2.67)*	*(83)*	*(17)*	*(97.60)*
					8th Gear				
326.35	21379	5.73	2100	1.4	0.521	13.54	180	62	28.82
(243.36)	*(95.10)*	*(9.21)*			*(0.317)*	*(2.67)*	*(82)*	*(17)*	*(97.60)*
					9th Gear				
320.37	18592	6.46	2100	1.3	0.533	13.24	181	70	28.83
(238.90)	*(82.70)*	*(10.40)*			*(0.324)*	*(2.61)*	*(83)*	*(21)*	*(97.63)*
					10th Gear				
318.35	16266	7.34	2101	0.9	0.536	13.18	182	72	28.84
(237.39)	*(72.36)*	*(11.81)*			*(0.326)*	*(2.60)*	*(83)*	*(22)*	*(97.66)*
					11th Gear				
307.14	13940	8.27	2097	0.6	0.555	12.73	182	74	28.84
(229.03)	*(62.01)*	*(13.30)*			*(0.337)*	*(2.51)*	*(83)*	*(23)*	*(97.66)*

REPAIRS AND ADJUSTMENTS: No repairs or adjustments.

REMARKS: All test results were determined from observed data obtained in accordance with official OECD, SAE and Nebraska test procedures. For the maximum power tests the fuel temperature at the injection pump inlet was maintained at 115°F*(46°C)*. The performance figures on this summary were taken from a test conducted under the OECD Code II test procedure.

We, the undersigned, certify that this is a true and correct report of official Tractor Test No. **1953**, Nebraska Summary 640, July 30, 2009.

Roger M. Hoy
Director

M.F. Kocher
V.I. Adamchuk
J.A. Smith
Board of Tractor Test Engineers

TRACTOR SOUND LEVEL WITH CAB	dB(A)
At no load in 6th gear	75.2
Bystander	--

TIRES, BALLAST AND WEIGHT	With Ballast	Without Ballast
Track width	36.0 in *(915 mm)*	36.0 in *(915 mm)*
Ballast - Cast iron(front end)	4280 lb *(1941 kg)*	None
- Cast iron(front idlers)	2165 lb *(982 kg)*	None
Height of Drawbar	21.0 in *(535 mm)*	21.0 in *(535 mm)*
Static Weight with operator	50000 lb*(22679 kg)*	43555 lb*(19756 kg)*

DRAWBAR PERFORMANCE
(Unballasted at 1700 RPM)
MAXIMUM POWER IN SELECTED GEARS

Power Hp *(kW)*	Drawbar pull lbs *(kN)*	Speed mph *(km/h)*	Crank-shaft speed rpm	Slip %	Fuel Consumption lb/hp.hr *(kg/kW.h)*	Hp.hr/gal *(kW.h/l)*	Temp.°F(°C) cool-ing med	Air dry bulb	Barom. inch Hg *(kPa)*
					3rd Gear				
282.27	42736	2.48	2173	12.3	0.582	12.12	181	67	28.91
(210.49)	*(190.10)*	*(3.99)*			*(0.354)*	*(2.39)*	*(83)*	*(19)*	*(97.90)*
					4th Gear				
325.49	40677	3.00	2025	9.5	0.545	12.95	181	70	28.91
(242.72)	*(180.94)*	*(4.83)*			*(0.332)*	*(2.55)*	*(83)*	*(21)*	*(97.90)*
					5th Gear				
356.80	39328	3.40	1903	8.2	0.509	13.87	182	73	28.89
(266.07)	*(174.94)*	*(5.47)*			*(0.309)*	*(2.73)*	*(83)*	*(23)*	*(97.83)*
					6th Gear				
367.26	37660	3.66	1790	6.5	0.483	14.60	182	67	28.83
(273.86)	*(167.52)*	*(5.89)*			*(0.294)*	*(2.88)*	*(83)*	*(19)*	*(97.63)*
					7th Gear				
373.78	35133	3.99	1701	4.6	0.470	15.03	182	65	28.83
(278.72)	*(156.28)*	*(6.42)*			*(0.286)*	*(2.96)*	*(83)*	*(18)*	*(97.63)*
					8th Gear				
376.44	30990	4.56	1700	3.1	0.470	15.03	182	60	28.82
(280.71)	*(137.85)*	*(7.33)*			*(0.286)*	*(2.96)*	*(83)*	*(16)*	*(97.60)*
					9th Gear				
372.63	27022	5.17	1700	2.4	0.475	14.86	183	71	28.84
(277.87)	*(120.20)*	*(8.32)*			*(0.289)*	*(2.93)*	*(84)*	*(22)*	*(97.66)*
					10th Gear				
371.12	23792	5.85	1701	1.9	0.474	14.91	183	73	28.84
(276.74)	*(105.83)*	*(9.41)*			*(0.288)*	*(2.94)*	*(84)*	*(23)*	*(97.66)*
					11th Gear				
366.96	20728	6.64	1700	1.6	0.479	14.75	184	75	28.85
(273.64)	*(92.20)*	*(10.68)*			*(0.291)*	*(2.91)*	*(84)*	*(24)*	*(97.70)*
					12th Gear				
362.96	18142	7.50	1703	1.2	0.492	14.36	183	76	28.85
(270.66)	*(80.70)*	*(12.07)*			*(0.299)*	*(2.83)*	*(84)*	*(24)*	*(97.70)*
					13th Gear				
356.11	14902	8.97	1701	0.9	0.496	14.22	183	77	28.85
(265.55)	*(66.29)*	*(14.43)*			*(0.302)*	*(2.80)*	*(84)*	*(25)*	*(97.70)*

DRAWBAR PERFORMANCE
(Ballasted at 1700 RPM)
MAXIMUM POWER IN SELECTED GEARS

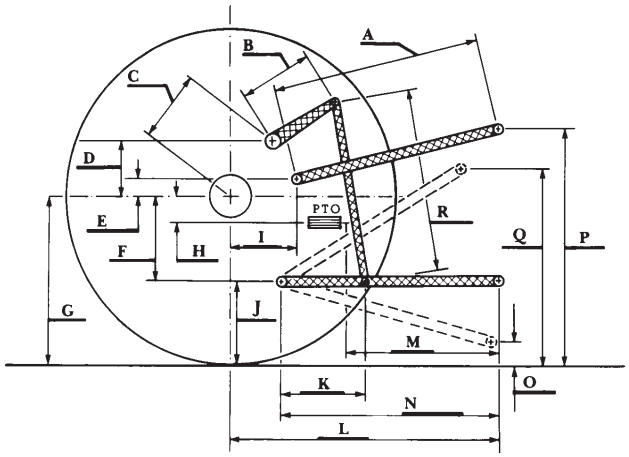
Power Hp *(kW)*	Drawbar pull lbs *(kN)*	Speed mph *(km/h)*	Crank-shaft speed rpm	Slip %	Fuel Consumption lb/hp.hr *(kg/kW.h)*	Fuel Consumption Hp.hr/gal *(kW.h/l)*	Temp.°F(°C) cool-ing med	Temp.°F(°C) Air dry bulb	Barom. inch Hg *(kPa)*
					3rd Gear				
318.88 *(237.79)*	49464 *(220.03)*	2.42 *(3.89)*	2104	11.6	0.535 *(0.325)*	13.18 *(2.60)*	180 *(82)*	54 *(12)*	28.98 *(98.14)*
					4th Gear				
353.39 *(263.52)*	46350 *(206.18)*	2.86 *(4.60)*	1896	7.8	0.510 *(0.310)*	13.83 *(2.72)*	180 *(82)*	63 *(17)*	28.66 *(97.05)*
					5th Gear				
361.67 *(269.70)*	43153 *(191.95)*	3.14 *(5.05)*	1756	8.0	0.491 *(0.299)*	14.37 *(2.83)*	182 *(83)*	69 *(21)*	28.95 *(98.04)*
					6th Gear				
376.45 *(280.72)*	39752 *(176.82)*	3.55 *(5.71)*	1704	4.6	0.465 *(0.283)*	15.17 *(2.99)*	181 *(83)*	63 *(17)*	28.65 *(97.02)*
					7th Gear				
375.45 *(279.97)*	34794 *(154.77)*	4.05 *(6.52)*	1699	3.2	0.466 *(0.283)*	15.14 *(2.98)*	181 *(83)*	63 *(17)*	28.63 *(96.95)*
					8th Gear				
377.22 *(281.29)*	30686 *(136.50)*	4.61 *(7.42)*	1704	2.3	0.465 *(0.283)*	15.19 *(2.99)*	180 *(82)*	63 *(17)*	28.67 *(97.09)*
					9th Gear				
371.27 *(276.85)*	26992 *(120.06)*	5.16 *(8.30)*	1690	2.2	0.476 *(0.289)*	14.83 *(2.92)*	182 *(83)*	70 *(21)*	28.91 *(97.90)*
					10th Gear				
373.06 *(278.19)*	23722 *(105.52)*	5.90 *(9.49)*	1708	1.6	0.475 *(0.289)*	14.86 *(2.93)*	181 *(83)*	70 *(21)*	28.89 *(97.83)*
					11th Gear				
369.31 *(275.39)*	20714 *(92.14)*	6.69 *(10.76)*	1706	1.2	0.478 *(0.290)*	14.79 *(2.91)*	181 *(83)*	70 *(21)*	28.87 *(97.77)*
					12th Gear				
357.26 *(266.41)*	17866 *(79.47)*	7.50 *(12.07)*	1700	0.9	0.494 *(0.300)*	14.30 *(2.82)*	182 *(83)*	71 *(22)*	28.85 *(97.70)*
					13th Gear				
358.77 *(267.53)*	14974 *(66.61)*	8.98 *(14.45)*	1703	0.7	0.501 *(0.304)*	14.10 *(2.78)*	181 *(83)*	71 *(22)*	28.83 *(97.63)*

HYDRAULIC PERFORMANCE

CATEGORY: IVN
Quick Attach: yes
OECD Static test
Maximum force exerted through whole range: 20936 lbs *(93.1 kN)*

	Standard pump	High flow pump
	2 inlets - 2 outlets	3 inlets - 3 outlets
i) Sustained pressure at compensator cutoff:	2943 psi *(203 bar)*	2856 psi *(197 bar)*
ii) Pump delivery rate at minimum pressure and rated engine speed:	44.5 GPM *(168.5 l/min)*	62.8 GPM *(237.7 l/min)*
iii) Pump delivery rate at maximum hydraulic power:	43.0 GPM *(162.8 l/min)*	56.7 GPM *(214.6 l/min)*
Delivery pressure:	2692 psi *(186 bar)*	2800 psi *(193 bar)*
Power:	67.5 HP *(50.4 kW)*	92.6 HP *(69.1 kW)*
	1 inlet - 1 outlet	1 inlet - 1 outlet
i) Sustained pressure at compensator cutoff:	2850 psi *(197 bar)*	2850 psi *(197 bar)*
ii) Pump delivery rate at minimum pressure and rated engine speed:	37.3 GPM *(141.2 l/min)*	40.9 GPM *(154.8 l/min)*
iii) Pump delivery rate at maximum hydraulic power:	36.4 GPM *(137.8 l/min)*	39.3 GPM *(148.8 l/min)*
Delivery pressure:	2235 psi *(154 bar)*	2291 psi *(158 bar)*
Power:	47.5 HP *(35.4 kW)*	52.5 HP *(39.2 kW)*

HITCH DIMENSIONS AS TESTED—NO LOAD



	inch	*mm*
A	30.2	*768*
B	21.7	*550*
C	41.4	*1051*
D	39.4	*1000*
E	12.4	*315*
F	11.8	*300*
G	35.0	*890*
H	0.4	*10*
I	23.0	*585*
J	23.2	*590*
K	29.0	*737*
L	53.9	*1369*
*L'	60.4	*1534*
M	26.6	*676*
N	36.6	*929*
O	9.0	*230*
P	50.2	*1275*
Q	46.5	*1181*
R	55.9	*1421*

*L' to Quick Attach ends

CHALLENGER MT845C DIESEL

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